

## ABSTRACT

A porous preform vitrification apparatus of the present invention, provided with a means for forcibly feeding nitrogen etc. from a furnace core tube to a discharge gas pipe so as to balance a pressure between a furnace core tube accommodating a porous preform and a heating furnace body surrounding this and so as to suppress pressure fluctuation in the furnace core tube to a minimum level, controlling the gas feed rate and discharge rate to the furnace core tube and the heating furnace body, and controlling the feed rate of the nitrogen from the furnace core tube to the discharge gas pipe based on a differential pressure signal of a pressure in the furnace core tube and a pressure in the heating furnace body.

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